

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A process for dry recycling of (U,Pu)O₂ mixed-oxide nuclear fuel scrap arising from the manufacture of fuel or from the scrapping of fuel as result of shortage or discontinuation of use, comprising:

~~resulting pellets, and~~

~~a process~~ first series of steps for pretreating scrap, including:

~~* pelletizing (20) and sintering (21) of powder scrap~~ the scrap, said scrap being in the form of powder, in order to form a first set of scrap pellets, and

~~* micronization (23) of the first set of scrap pellets in order to form scrap powder designed to be incorporated as scrap in powder form into the first (1) and/or second (4) blend.~~ micronized scrap powder; and

~~a process~~ second series of steps for manufacturing (U,Pu)O₂ mixed oxide fuel pellets, including:

~~* a dispensing and a first blending (1) of waste in powder format~~ at least a portion of the micronized powder scraps and, if required, of PuO₂ and/or UO₂ powders, to form a first blend;

~~* micronization (2) and forced sieving (3) of this~~ the first blend,

- * another dispensing and a second blending (4) of the first sieved blend, of UO_2 powders and, if required, of ~~scrap in powder form~~ a further portion of the micronized scrap powder, to form a second blend,
- * pelletizing (6) of the second blend to form pellets, and
- * sintering (7) of the pellets, to form sintered pellets.

~~_____ a process for pretreating scraps including:~~

~~_____ * pelletizing (20) and sintering (21) of powder scraps in order to form scrap pellets,~~
~~and~~

~~_____ * micronization (23) of the scrap pellets in order to form~~

2. (currently amended): The process as claimed in Claim 1, ~~which, in addition, in which~~ said first series of steps further includes crushing (22) of the first set of scrap pellets before their micronization.

3. (currently amended): The process as claimed in Claim 1, wherein scrapped unsintered powders and/or powders arising from grinding (8) of fuel pellets ~~are taken as powder scrap for the aforementioned pelletizing (20) and sintering (21) of the pretreatment in~~ said second series of steps are taken as said scrap in said first series of steps.

4. (currently amended): The process as claimed in Claim 1, wherein ~~unirradiated (U,Pu)O₂ mixed oxide nuclear fuel pellets, possibly produced by different manufacturing processes and scrapped,~~ a second set of scrap pellets, arising from sorting (9) of fuel pellets in

said second series of steps undergo the same pretreatment process as the ~~aforementioned~~first set
of scrap pellets for the purpose of recycling them.

5. (currently amended): The process as claimed in Claim 1, ~~wherein up to 40% of scrap,~~
~~with respect to the net production, is incorporated into the aforementioned process for~~
~~manufacturing fuel pellets.~~4, wherein unirradiated (U,Pu)O₂ mixed-oxide nuclear fuel pellets,
possibly produced by different manufacturing processes and scrapped, are used as a third set of
pellets, said third set of pellets undergoing the same pretreatment process as the first set of scrap
pellets for the purpose of recycling them.

6. (currently amended): The process as claimed in Claim ~~4~~5, wherein up to ~~100% of~~
~~scrap~~40% of scrap, with respect to the net production, is incorporated into said first blend (1)the
aforementioned process for manufacturing fuel pellets.

7. (currently amended): The process as claimed in Claim ~~4~~6, ~~wherein a proportion of~~
~~99.5%, expressed as mass of PuO₂, of the scraps from the aforementioned process for~~
~~manufacturing fuel pellets is dry-recycled~~wherein up to 100% of scrap is incorporated into said
first blend (1).

8. (currently amended): The process as claimed in Claim 1, wherein a ~~ball-milling~~
~~process is used for the micronization (2, 23) of the first blend and/or of the scrap~~

~~pellets~~proportion of 99.5%, expressed as mass of PuO₂, of the scraps from the aforementioned process for manufacturing fuel pellets is dry-recycled.

9. (currently amended): The process as claimed in Claim 1, wherein ~~a lubricant is added before pelletizing (6 and 20), preferably zinc stearate~~ball milling process is used for the micronization (2, 23) of the first blend and/or of the scrap pellets.

10. (currently amended): The process as claimed in Claim 1, wherein ~~the fuel pellets containing scraps and/or the scrap pellets are sintered (7, 21) in an argon and hydrogen atmosphere, preferably at a temperature of between 1670 and 1760°C~~a lubricant is added before pelletizing (6 and 20).

11. (currently amended): The process as claimed in Claim 1, ~~wherein, during sintering (7, 21), the partial pressure of oxygen p_{O₂} is adjusted, preferably by humidification, in order to improve the interdiffusion of the PuO₂ and UO₂ oxides~~10, wherein zinc stearate is used as the lubricant.

12. (currently amended): The process as claimed in Claim 1, wherein scraps and/or UO₂ and PuO₂ oxide powders are recovered during the process or transfer operations by means of cleanable filters, so as to recycle them into scrap pellets at the pelletizing (20) and sintering (21) ~~steps~~steps.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO. 09/889,881

13. (new): The process as claimed claim 1, wherein the fuel pellets containing scraps and/or the scrap pellets are sintered (7, 21) in an argon and hydrogen atmosphere, at a temperature of between 1670 and 1760°C.

14. (new): The process as claimed in claim 1, wherein, during sintering (7, 21), the partial pressure of oxygen p_{O_2} is adjusted, by humidification, in order to improve the interdiffusion of the PuO_2 and UO_2 oxides.